

### **REMARKS**

After entry of this amendment, claims 2-15, 28, 31-33, and 50-65 are pending. Claim 23 has been cancelled without prejudice or disclaimer. Claim 2 has been amended without prejudice or disclaimer and finds support *inter alia* in the original claim. Claim 2 finds further support in the specification, for example, at page 8, lines 25-28, and page 9, lines 12-18. No new matter has been added.

### **Claim Rejections – 35 U.S.C. § 112**

Claims 2-15, 23, 28, 31-33 and 50-65 are rejected under 35 U.S.C. § 112, first paragraph, for allegedly lacking an enabling disclosure. Applicants respectfully disagree and traverse the rejection. However, to expedite prosecution, claim 2 has been amended without prejudice or disclaimer to recite the claimed subject matter with more specificity and claim 23 has been cancelled without prejudice or disclaimer. It is respectfully submitted that the claims as amended overcome the rejection for the reasons already of record and for the following additional reasons.

It is noted initially that, in maintaining the present rejection, the Examiner alleges that the claimed process “will involve manipulating any of the numerous genes encoding any and all enzymes and/or proteins associated with any of the entire metabolic pathways in these organisms.” Office Action at page 2. Without acquiescing to the merits of the Examiner’s argument and solely for expediting prosecution, claim 2 has been amended to specify that the pantothenate biosynthetic pathway is deregulated by overexpressing at least one gene selected from the group consisting of *panB*, *panC*, *panD*, and *panE1*, and the MTF biosynthetic pathway is deregulated by overexpressing at least one gene selected from the group consisting of *gcv*, *serA*, *serC*, *serB*, *glyA*, *sul*, *fol*, *mtrA*, *pab*, *panB*, and *purR*. As such, the claimed process now requires production of pantothenate by (1) culturing a recombinant microorganism selected from *Bacillus*, *Corynebacterium*, *Lactobacillus*, *Streptomyces*, *Salmonella*, *Escherichia*, *Klebsiella*, *Serratia*, *Proteus*, and *Saccharomyces*, and (2) overexpressing at least one of *panB*, *panC*, *panD*, and *panE1*, and at least one of *gcv*, *serA*, *serC*, *serB*, *glyA*, *sul*, *fol*, *mtrA*, *pab*, *panB*, and *purR* obtained from *Bacillus*, *Corynebacterium*, *Lactobacillus*, *Lactococci*, or *Streptomyces*. Thus, contrary to the Examiner’s assertion, the present claims are limited to overexpression of certain

enzymes and/or proteins associated with the pantothenate biosynthetic pathway or the MTF biosynthetic pathway in certain microorganisms.

Moreover, as discussed in more detail in Applicants' response dated March 1, 2010, all of the genes recited in amended claim 2 are known in the art. Thus, the genes to be overexpressed in the claimed process for the production of pantothenate are well defined by (1) their function (i.e. *panB*, *panC*, *panD*, *panE1*, *gcv*, *serA*, *serC*, *serB*, *glyA*, *sul*, *fol*, *mtrA*, *pab*, *panB*, or *purR*), (2) their origin (i.e. *Bacillus*, *Corynebacterium*, *Lactobacillus*, *Lactococci*, or *Streptomyces*), and (3) the host organism in which they are to be overexpressed (i.e. *Bacillus*, *Corynebacterium*, *Lactobacillus*, *Streptomyces*, *Salmonella*, *Escherichia*, *Klebsiella*, *Serratia*, *Proteus*, or *Saccharomyces*). Based on the detailed guidance and working examples provided in the specification, the state and knowledge of the art, and the high level of skill, Applicants respectfully submit that one skilled in the art would be able to practice the claimed process without undue experimentation. On these facts, a proper analysis of the relevant factors supports enablement. *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

The Examiner additionally alleges that undue experimentation would be required in regulating pantothenate kinase activity. Without acquiescing to the merits of the Examiner's argument and solely for expediting prosecution, claim 23, the only claim reciting pantothenate kinase, has been cancelled without prejudice or disclaimer. Applicants believe that any rejection based on this ground is now rendered moot in light of the present amendment.

For at least the above reasons and for the reasons already of record, further in view of the present amendment, reconsideration and withdrawal of this rejection is respectfully requested.

#### **Claim Rejections – Double Patenting**

Claims 2-15, 23, 28, 31-33 and 50-65 are rejected on the ground of nonstatutory obviousness-type double patenting over claims 1-17 of U.S. Pat. No. 7,291,789 and claims 1-34 of U.S. Pat. No. 7,244,593. Claims 2-15, 23, 28, 31-33 and 50-65 are further provisionally rejected for obviousness-type double patenting over claims 2-6, 11-26, 29-32 and 35-40 of co-pending Application No. 11/879,143. Applicants will consider filling a terminal disclaimer upon an indication that the claims are allowable.

**CONCLUSION**

In view of the above remarks and further in view of the above amendments, Applicants respectfully request withdrawal of the rejection and allowance of the claims. If any outstanding issues remain, the Examiner is invited to telephone the undersigned at the number given below.

This response is filed within the three-month period for response from the mailing of the Office Communication, to and including September 9, 2010. No fee is believed due. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 13311-00036-US from which the undersigned is authorized to draw.

Respectfully submitted,

By / Hui-Ju Wu /

Hui-Ju Wu, Ph.D.

Registration No.: 57,209

CONNOLLY BOVE LODGE & HUTZ LLP

1007 North Orange Street; P. O. Box 2207

Wilmington, Delaware 19899-2207

(302) 658-9141

(302) 658-5614 (Fax)

Attorney for Applicants

#787257